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## Nata

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LumCAT: LN01D05024DA-N

Luminaire: 97.70.234.00

Report No: 201228-B007

Test No: 201228-C007

LampCAT: CXM-9-TC40 LES9.8

Lamp flux(lm): 2079.0

Number of Lamps: 1

Length(mm): 92

Phm Type: C

Voltage(V): 35.0900

Current(A): 0.5000

Power (W): 17.5450

PF: 0.0000

Ballast type: DC

Width(mm): 92

Height(mm): 50

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## Photometric Results

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Lumens(lm): 1850.40

Efficiency(%): 89.00%

Lumens(lm)/Power(W): 105.47

Central intensity(cd): 6148.407

Maximum intensity(cd): 6148.407

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=29.5

[C90/270]Total=29.5

Field angle(10%Imax): [C0/180]Total=49.6

[C90/270]Total=49.6

Maximum s/h(1/2): C0\_180=0.50 C90\_270=0.50

Maximum s/h(1/4): C0\_180=0.48 C90\_270=0.48

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.00%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 96.584%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6148.406	0.000	0	.000%	.000%
1.0	6134.695	5.877	5.877	.283%	.318%
2.0	6091.031	17.548	23.425	.844%	1.266%
3.0	6012.563	28.948	52.373	1.392%	2.830%
4.0	5910.609	39.911	92.283	1.920%	4.987%
5.0	5781.797	50.300	142.583	2.419%	7.706%
6.0	5610.938	59.872	202.455	2.880%	10.941%
7.0	5413.078	68.426	270.881	3.291%	14.639%
8.0	5208.188	76.014	346.895	3.656%	18.747%
9.0	4956.398	82.378	429.274	3.962%	23.199%
10.0	4661.086	87.035	516.309	4.186%	27.902%
11.0	4378.852	90.328	606.636	4.345%	32.784%
12.0	4053.445	92.177	698.813	4.434%	37.765%
13.0	3677.695	91.749	790.562	4.413%	42.724%
14.0	3334.219	89.752	880.314	4.317%	47.574%
15.0	2992.641	86.858	967.172	4.178%	52.268%
16.0	2627.508	82.351	1049.523	3.961%	56.719%
17.0	2299.008	76.719	1126.242	3.690%	60.865%
18.0	1994.063	70.783	1197.026	3.405%	64.690%
19.0	1711.266	64.465	1261.491	3.101%	68.174%
20.0	1456.945	57.987	1319.478	2.789%	71.308%
21.0	1208.166	51.176	1370.653	2.462%	74.073%
22.0	1010.538	44.586	1415.239	2.145%	76.483%
23.0	859.605	39.241	1454.48	1.887%	78.603%
24.0	714.684	34.420	1488.899	1.656%	80.464%
25.0	586.223	29.580	1518.479	1.423%	82.062%
26.0	494.606	25.513	1543.992	1.227%	83.441%
27.0	416.236	22.284	1566.276	1.072%	84.645%
28.0	343.695	19.240	1585.516	.925%	85.685%
29.0	300.720	16.860	1602.376	.811%	86.596%
30.0	257.070	15.060	1617.436	.724%	87.410%
31.0	226.132	13.447	1630.883	.647%	88.137%
32.0	195.863	12.090	1642.972	.582%	88.790%
33.0	175.823	10.950	1653.922	.527%	89.382%
34.0	156.909	10.069	1663.992	.484%	89.926%
35.0	141.476	9.267	1673.259	.446%	90.427%
36.0	129.171	8.617	1681.876	.414%	90.892%
37.0	117.352	8.040	1689.916	.387%	91.327%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	107.726	7.513	1697.429	.361%	91.733%
39.0	98.838	7.051	1704.48	.339%	92.114%
40.0	90.464	6.602	1711.082	.318%	92.471%
41.0	83.552	6.197	1717.279	.298%	92.806%
42.0	77.210	5.841	1723.119	.281%	93.121%
43.0	70.812	5.483	1728.602	.264%	93.418%
44.0	65.566	5.147	1733.75	.248%	93.696%
45.0	60.792	4.856	1738.606	.234%	93.958%
46.0	55.814	4.560	1743.166	.219%	94.205%
47.0	51.687	4.276	1747.442	.206%	94.436%
48.0	48.122	4.035	1751.476	.194%	94.654%
49.0	44.515	3.804	1755.281	.183%	94.859%
50.0	41.295	3.578	1758.858	.172%	95.053%
51.0	38.756	3.387	1762.245	.163%	95.236%
52.0	36.338	3.222	1765.468	.155%	95.410%
53.0	34.277	3.072	1768.539	.148%	95.576%
54.0	32.484	2.943	1771.482	.142%	95.735%
55.0	30.902	2.829	1774.311	.136%	95.888%
56.0	29.559	2.732	1777.043	.131%	96.035%
57.0	28.350	2.648	1779.691	.127%	96.179%
58.0	27.176	2.568	1782.259	.124%	96.317%
59.0	26.213	2.496	1784.755	.120%	96.452%
60.0	25.298	2.434	1787.188	.117%	96.584%
61.0	24.370	2.370	1789.559	.114%	96.712%
62.0	23.604	2.312	1791.87	.111%	96.837%
63.0	22.950	2.264	1794.134	.109%	96.959%
64.0	22.212	2.216	1796.351	.107%	97.079%
65.0	21.727	2.174	1798.525	.105%	97.196%
66.0	21.473	2.155	1800.68	.104%	97.313%
67.0	21.312	2.151	1802.832	.103%	97.429%
68.0	21.537	2.171	1805.002	.104%	97.546%
69.0	21.895	2.216	1807.218	.107%	97.666%
70.0	22.366	2.273	1809.491	.109%	97.789%
71.0	23.034	2.347	1811.838	.113%	97.916%
72.0	23.773	2.434	1814.272	.117%	98.047%
73.0	24.616	2.530	1816.802	.122%	98.184%
74.0	25.390	2.629	1819.431	.126%	98.326%
75.0	26.142	2.723	1822.154	.131%	98.473%

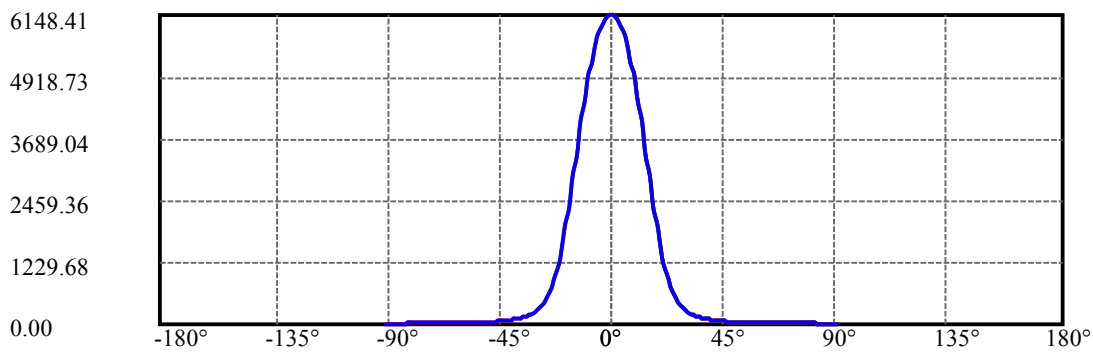
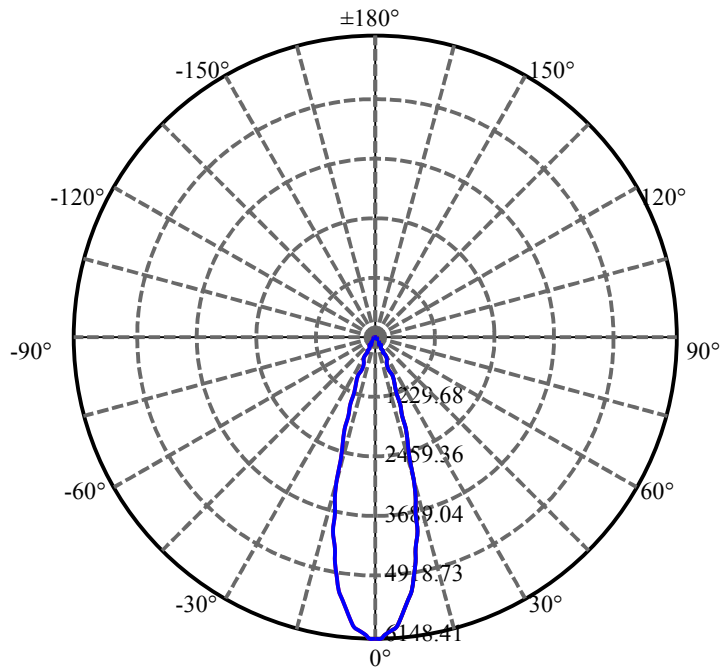
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	26.705	2.805	1824.959	.135%	98.625%
77.0	26.916	2.859	1827.818	.138%	98.779%
78.0	26.627	2.866	1830.684	.138%	98.934%
79.0	25.460	2.799	1833.483	.135%	99.086%
80.0	23.414	2.635	1836.118	.127%	99.228%
81.0	20.834	2.393	1838.51	.115%	99.357%
82.0	17.951	2.103	1840.614	.101%	99.471%
83.0	15.159	1.800	1842.414	.087%	99.568%
84.0	12.966	1.532	1843.946	.074%	99.651%
85.0	11.355	1.327	1845.273	.064%	99.723%
86.0	10.048	1.170	1846.443	.056%	99.786%
87.0	9.373	1.063	1847.506	.051%	99.843%
88.0	8.944	1.003	1848.509	.048%	99.898%
89.0	8.592	0.961	1849.47	.046%	99.950%
90.0	8.423	0.933	1850.403	.045%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1617.44	77.80%	87.41%
0-40	1711.08	82.30%	92.47%
0-60	1787.19	85.96%	96.58%
0-90	1849.47	88.96%	99.95%
0-120	1849.47	88.96%	99.95%
0-180	1850.40	89.00%	100.00%
60-90	64.72	3.11%	3.50%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-23.75	1480.32	71.20%	80.00%

ZONAL LUMEN SUMMARY

0-10	516.31
10-20	803.17
20-30	297.96
30-40	93.65
40-50	47.78
50-60	28.33
60-70	22.30
70-80	26.63
80-90	13.35
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00



C0(Max): —————

C0/C180: —————

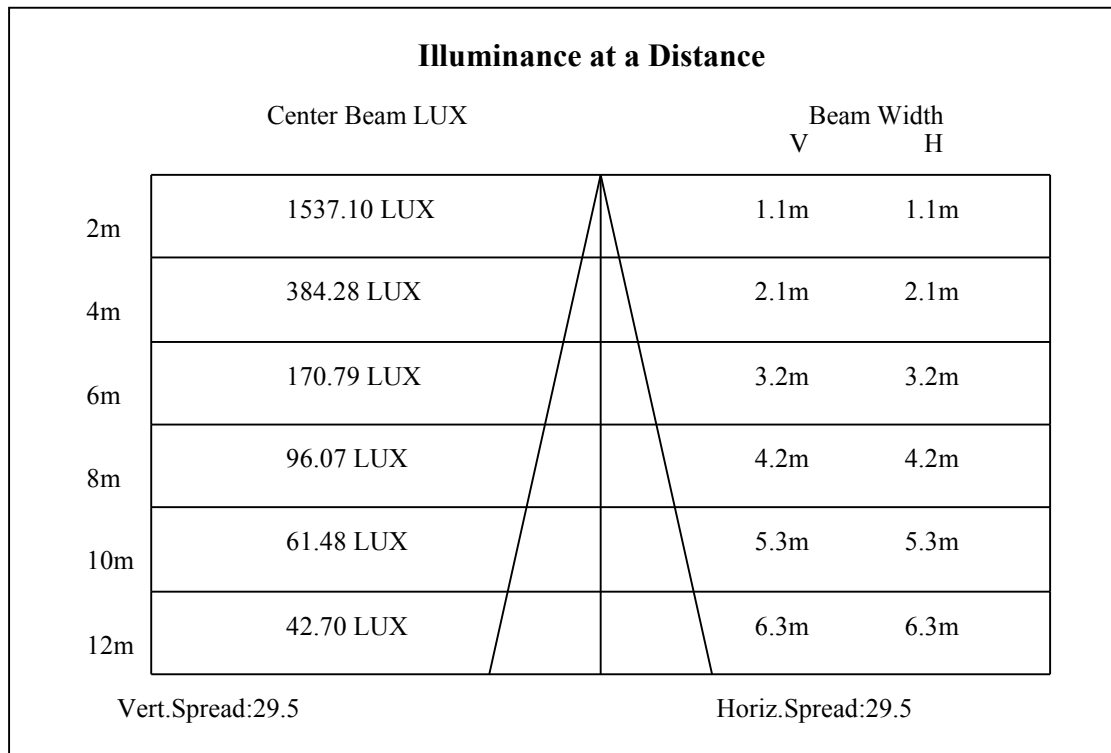
C90/C270: —————

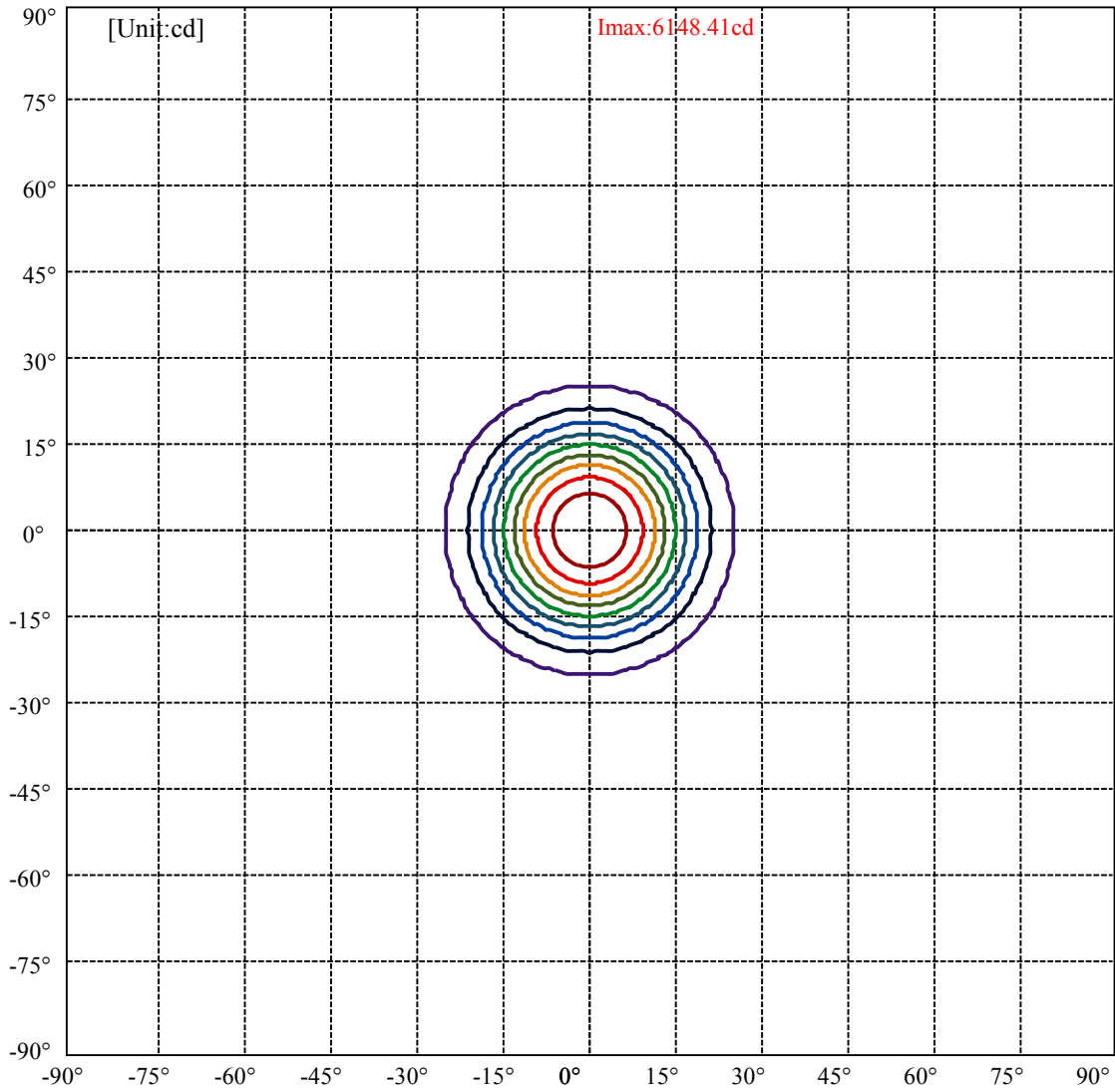
Field angle(10%Imax):C0/180Left:24.8 Right:24.8

:C90/270Left:24.8 Right:24.8

Beam Angle(50%Imax):C0/180Left:14.8 Right:14.8

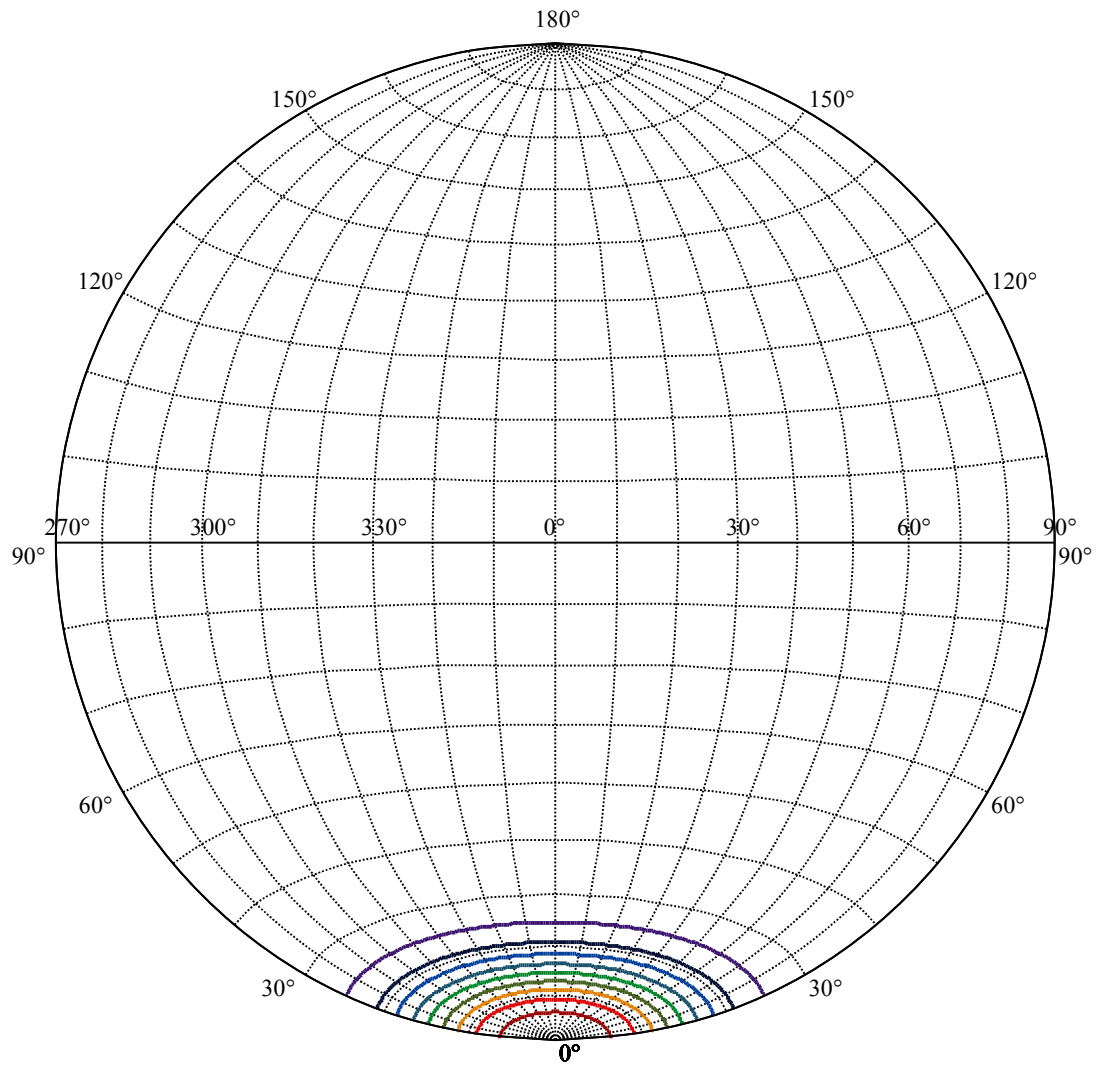
:C90/270Left:14.8 Right:14.8





(10%Imax) 614.841	—
(20%Imax) 1229.68	—
(30%Imax) 1844.52	—
(40%Imax) 2459.36	—
(50%Imax) 3074.2	—
(60%Imax) 3689.04	—
(70%Imax) 4303.88	—
(80%Imax) 4918.73	—
(90%Imax) 5533.57	—





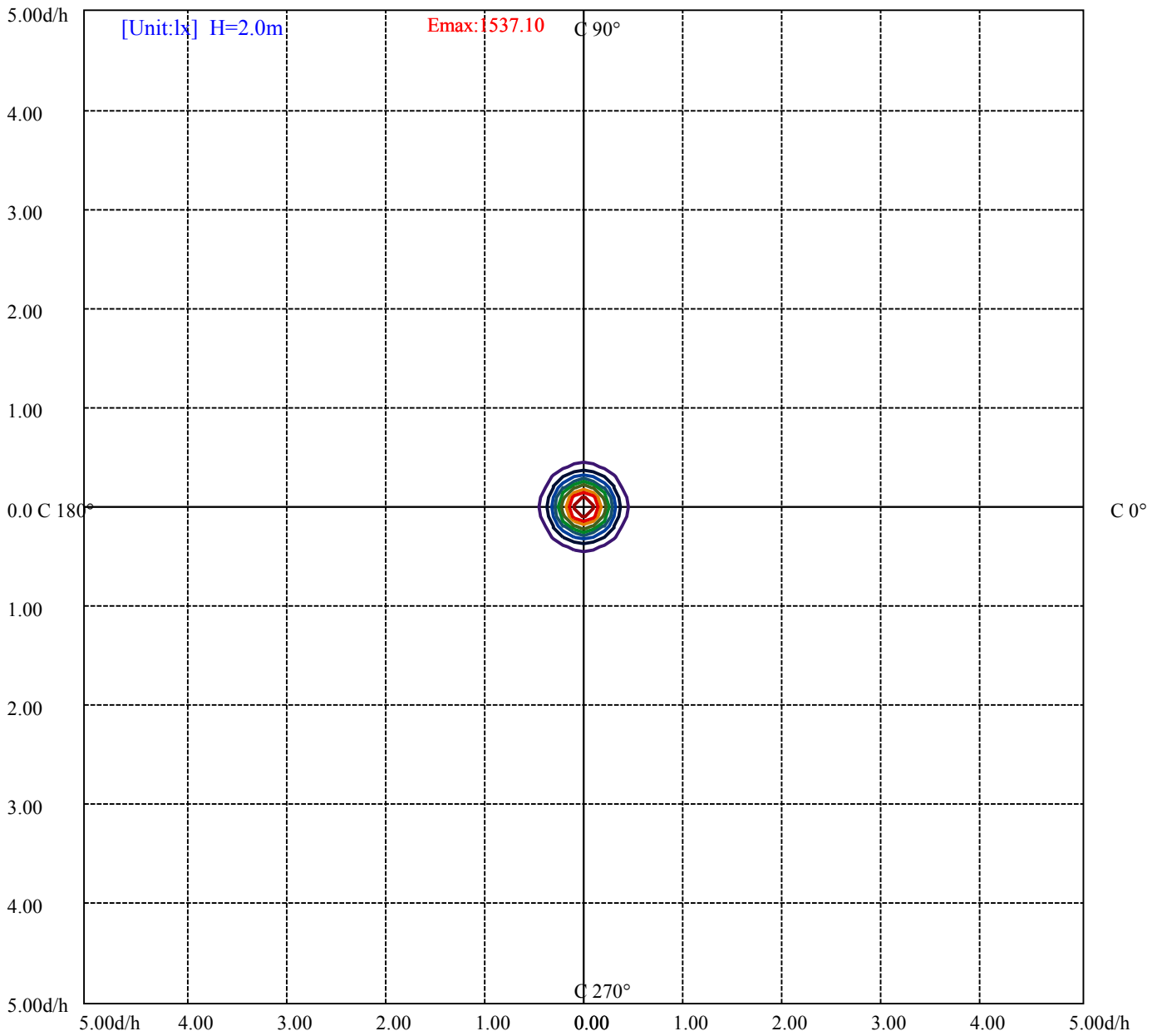
House

[Unit:cd]

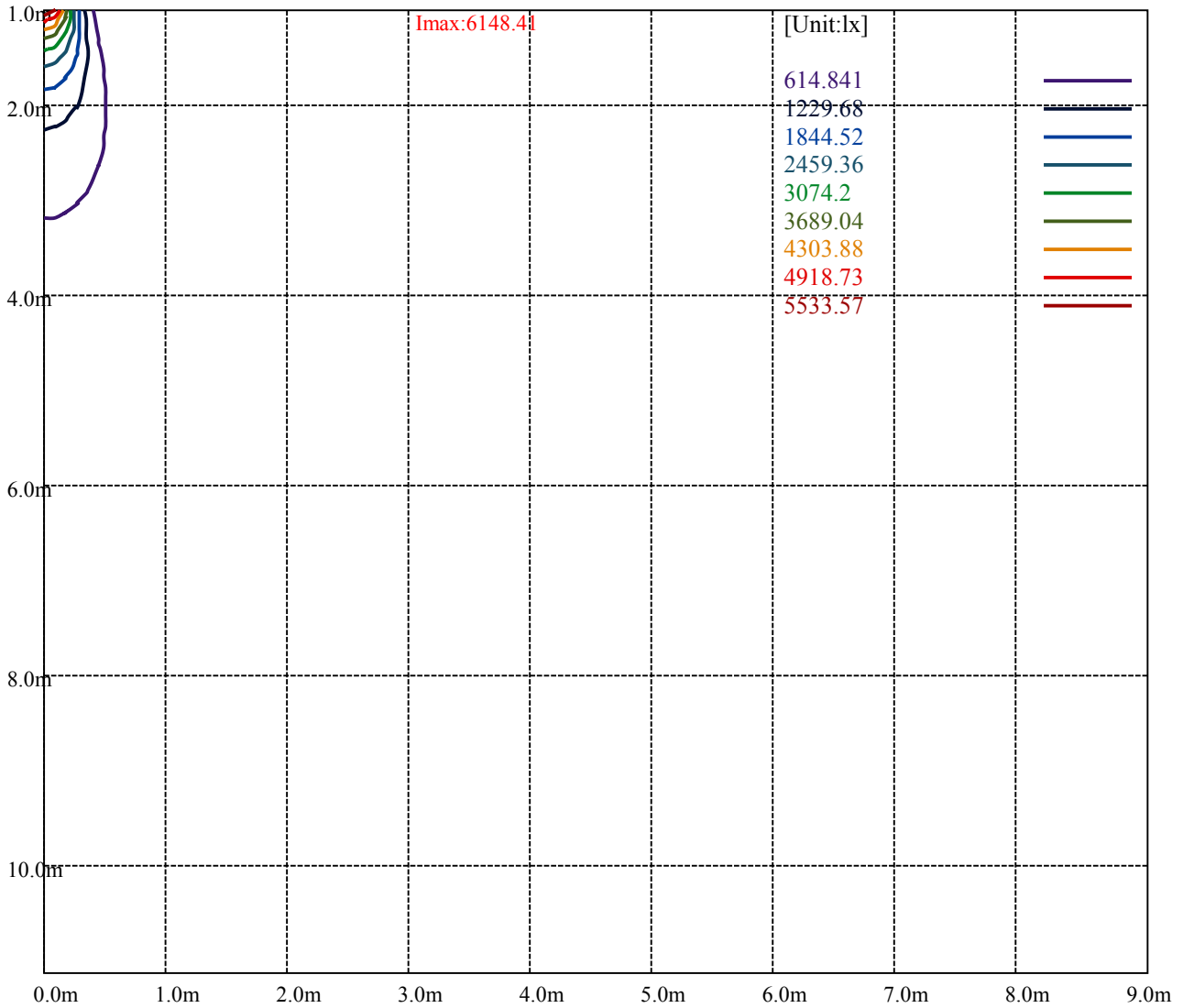
Road

**Imax:6148.41**

(10%Imax) 614.841	—
(20%Imax) 1229.68	—
(30%Imax) 1844.52	—
(40%Imax) 2459.36	—
(50%Imax) 3074.2	—
(60%Imax) 3689.04	—
(70%Imax) 4303.88	—
(80%Imax) 4918.73	—
(90%Imax) 5533.57	—



(10%Emax) 153.71	—
(20%Emax) 307.42	—
(30%Emax) 461.13	—
(40%Emax) 614.84	—
(50%Emax) 768.55	—
(60%Emax) 922.26	—
(70%Emax) 1075.97	—
(80%Emax) 1229.68	—
(90%Emax) 1383.39	—



Luminance Table

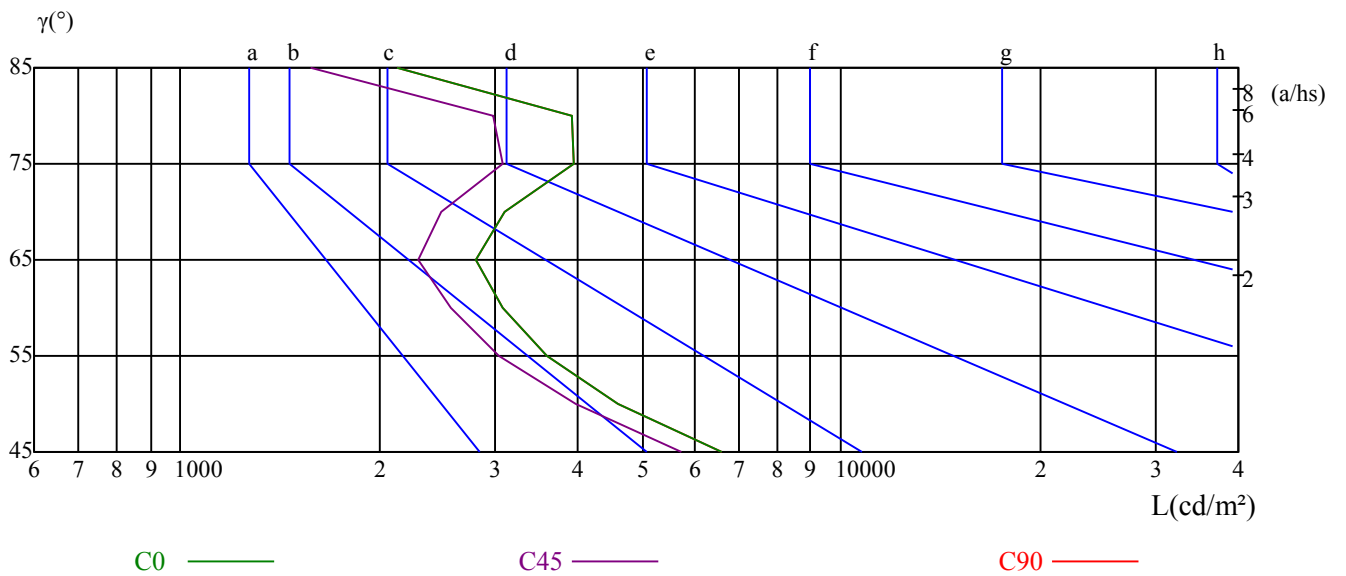
$\gamma$	45	50	55	60	65	70	75	80	85
C0	6581	4607	3584	3079	2805	3099	3941	3902	2134
C45	5743	3961	3035	2564	2294	2483	3085	2973	1573
C90	6581	4607	3584	3079	2805	3099	3941	3902	2134

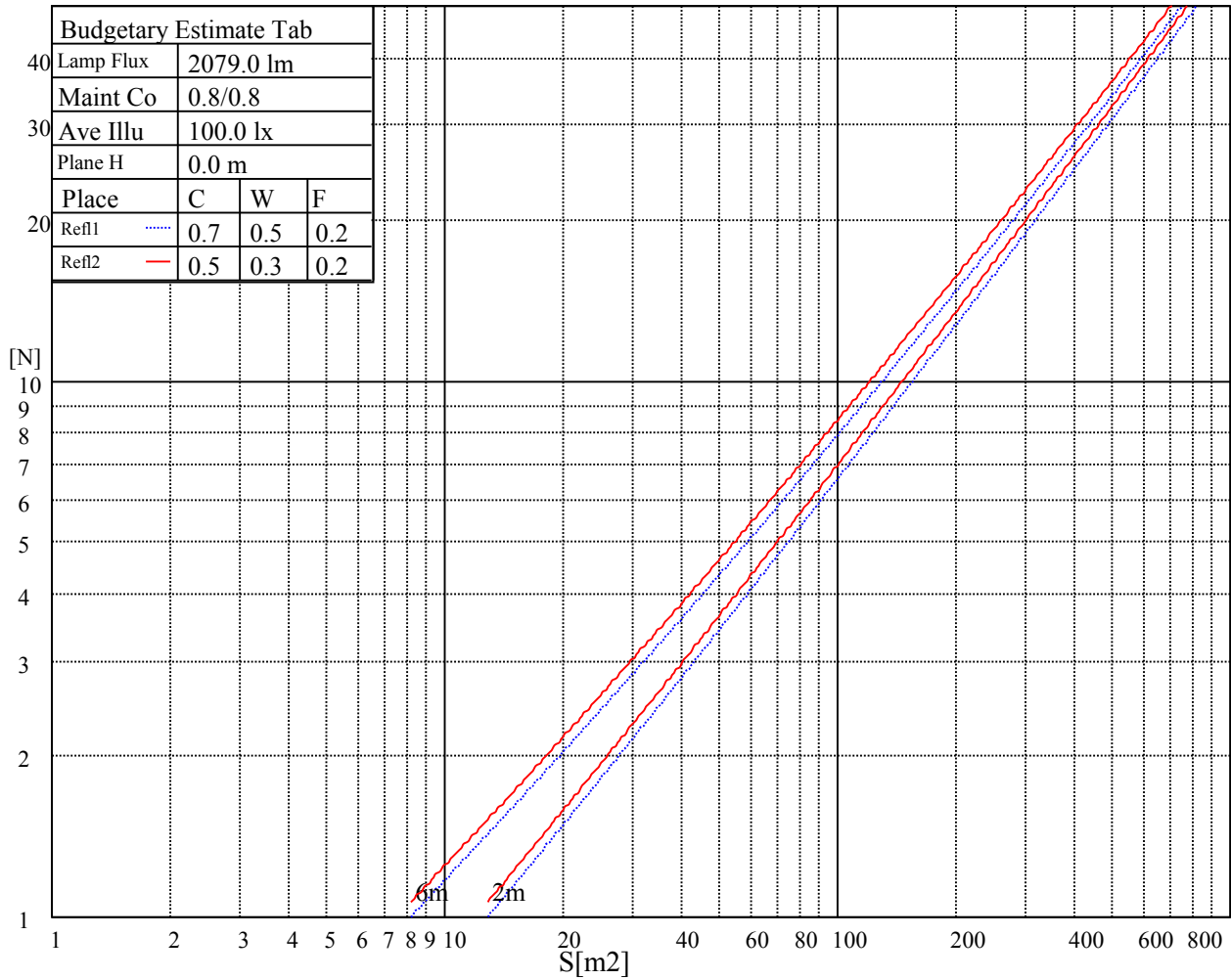
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6074	6074	6074	11934	11934	11934	15393	15393	15393

Glare Table

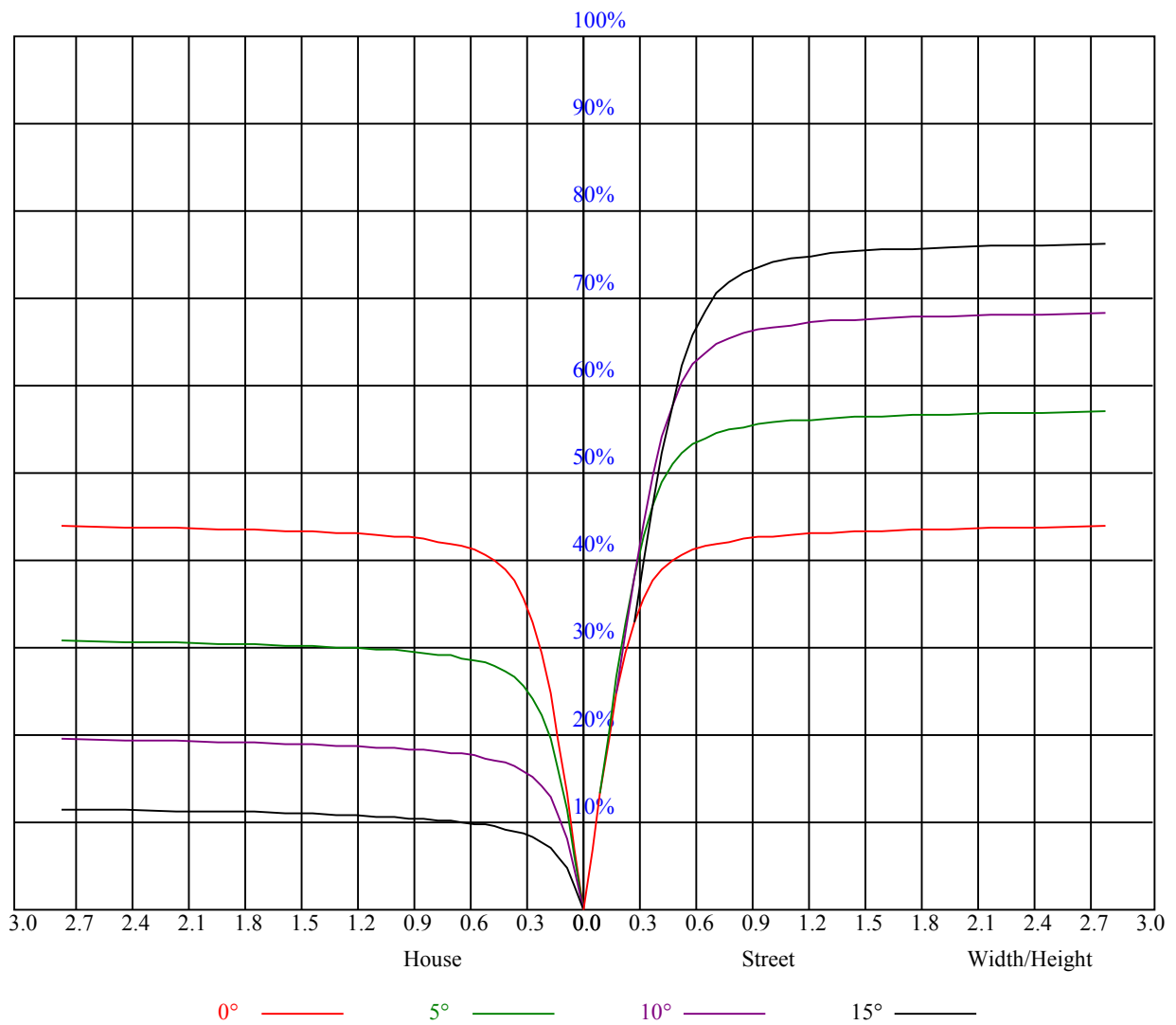
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.06	1.06	1.06	1.03	1.03	1.03	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.97	0.95	0.97	0.95	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.76
4	0.85	0.80	0.77	0.84	0.80	0.77	0.82	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.81	0.77	0.73	0.80	0.76	0.73	0.79	0.75	0.73	0.77	0.74	0.72	0.76	0.73	0.71	0.70
6	0.78	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.71	0.69	0.73	0.71	0.69	0.68
7	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.65
8	0.72	0.68	0.65	0.71	0.67	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.63
9	0.69	0.65	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.59



Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	6160.50	6129.00	6060.38	5959.13	5839.31	5689.13	5466.94	5264.44	5041.13
45.0	6156.00	6111.56	6035.06	5941.13	5806.69	5639.63	5460.75	5230.13	5002.88
90.0	6135.75	6105.38	6049.13	5933.81	5835.38	5697.00	5460.75	5287.50	5065.31
135.0	6142.50	6146.44	6120.00	6069.38	5982.75	5864.06	5729.06	5546.25	5357.81
180.0	6160.50	6165.00	6141.38	6081.19	5990.06	5880.38	5721.19	5526.00	5324.63
225.0	6156.00	6168.38	6155.44	6103.69	6032.25	5933.25	5793.19	5622.75	5441.63
270.0	6135.75	6147.00	6123.94	6080.63	5986.69	5883.19	5757.75	5568.75	5389.88
315.0	6140.25	6104.81	6042.94	5931.56	5811.75	5667.75	5497.88	5258.81	5042.25
360.0	6160.50	6129.00	6060.38	5959.13	5839.31	5689.13	5466.94	5264.44	5041.13
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4730.06	4454.44	4154.63	3790.69	3409.88	3067.31	2691.00	2369.81	2033.44
45.0	4718.25	4397.06	4086.56	3755.81	3329.44	2991.94	2667.38	2280.94	1993.50
90.0	4784.06	4473.00	4173.75	3813.19	3438.56	3107.81	2743.88	2431.69	2099.25
135.0	5119.31	4849.88	4583.81	4251.94	3896.44	3566.25	3276.00	2828.25	2516.06
180.0	5100.75	4789.69	4516.31	4220.44	3819.38	3484.69	3147.19	2771.44	2407.50
225.0	5208.19	4947.75	4689.00	4366.13	4055.06	3686.06	3306.38	2965.50	2634.19
270.0	5186.81	4903.31	4646.81	4366.69	3982.50	3653.44	3316.50	2935.13	2568.38
315.0	4803.75	4473.56	4179.94	3862.69	3490.31	3116.25	2792.81	2437.31	2139.75
360.0	4730.06	4454.44	4154.63	3790.69	3409.88	3067.31	2691.00	2369.81	2033.44
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1730.81	1488.38	1244.25	1032.19	868.50	727.31	580.50	486.00	408.94
45.0	1724.63	1491.19	1230.75	1046.81	865.69	704.81	594.56	496.13	416.81
90.0	1792.13	1547.44	1326.94	1105.82	919.07	778.39	642.77	530.72	449.16
135.0	2251.69	1904.63	1619.44	1416.38	1157.06	948.94	820.13	667.69	559.13
180.0	2103.75	1789.88	1538.44	1111.89	1044.62	900.79	739.52	592.54	507.77
225.0	2250.00	1963.69	1702.13	1411.88	1110.32	1022.51	845.78	697.56	587.70
270.0	2262.94	1944.56	1656.00	1425.38	1195.31	1017.56	843.19	695.81	585.56
315.0	1836.56	1560.38	1337.63	1114.99	923.74	776.53	651.04	523.35	441.79
360.0	1730.81	1488.38	1244.25	1032.19	868.50	727.31	580.50	486.00	408.94
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	345.94	285.19	260.89	221.01	189.68	171.51	157.89	141.08	127.97
45.0	349.31	296.44	286.31	226.74	199.46	177.36	159.24	144.39	129.66
90.0	382.22	315.28	273.60	239.79	208.91	183.83	165.32	147.99	133.14
135.0	472.50	387.56	333.56	288.00	241.09	213.41	190.46	167.29	151.59
180.0	427.50	340.65	297.28	257.57	222.75	195.58	176.34	158.46	143.33
225.0	484.14	408.32	341.72	289.63	252.84	219.83	193.73	174.54	158.12
270.0	493.31	401.63	344.25	298.69	289.13	224.21	200.08	175.11	154.69
315.0	374.96	314.49	268.14	235.13	205.20	181.18	163.52	146.42	133.31
360.0	345.94	285.19	260.89	221.01	189.68	171.51	157.89	141.08	127.97
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	118.97	107.72	99.56	92.08	83.81	77.96	72.51	66.21	61.59
45.0	119.64	109.91	99.62	91.86	86.01	78.02	71.89	67.61	61.76
90.0	121.78	110.64	101.76	92.76	84.49	77.91	71.89	65.14	60.19
135.0	137.81	124.43	112.84	103.73	94.56	87.19	79.76	73.52	67.73
180.0	131.46	119.98	111.04	101.81	93.38	86.68	80.55	73.52	68.40
225.0	142.31	128.93	118.69	109.35	99.17	91.86	85.28	77.85	72.45
270.0	140.91	127.58	117.34	107.04	97.88	90.56	83.25	76.56	71.04
315.0	120.49	109.63	100.97	92.08	84.43	78.24	72.56	66.09	61.37
360.0	118.97	107.72	99.56	92.08	83.81	77.96	72.51	66.21	61.59



Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	57.43	52.65	49.05	45.79	42.41	39.38	37.24	34.76	32.91
45.0	57.09	53.83	49.44	46.35	43.54	40.22	38.08	36.00	33.86
90.0	55.80	50.79	47.14	43.82	40.56	37.69	35.44	33.30	31.67
135.0	62.38	57.04	52.99	49.16	45.11	42.13	39.32	36.73	34.54
180.0	63.62	58.28	54.39	50.68	46.91	43.48	40.61	38.36	35.83
225.0	67.44	62.16	57.49	53.83	49.84	46.35	43.48	40.56	38.42
270.0	65.59	59.29	54.62	50.29	46.07	42.30	39.38	36.68	34.37
315.0	56.98	52.48	48.38	45.06	41.68	38.81	36.51	34.31	32.63
360.0	57.43	52.65	49.05	45.79	42.41	39.38	37.24	34.76	32.91
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	31.44	29.98	28.80	27.68	26.55	25.65	24.75	23.91	23.12
45.0	32.29	30.94	29.42	28.29	27.28	26.21	25.26	24.41	23.51
90.0	30.04	28.69	27.68	26.66	25.71	24.92	24.19	23.40	22.84
135.0	32.74	31.05	29.64	28.46	27.34	26.33	25.37	24.47	23.74
180.0	33.75	32.23	30.60	29.25	28.01	27.00	26.04	25.03	24.19
225.0	36.11	34.09	32.57	31.16	29.59	28.46	27.45	26.21	25.31
270.0	32.51	30.77	29.42	28.01	26.83	25.93	24.92	24.02	23.34
315.0	30.99	29.48	28.35	27.28	26.10	25.20	24.41	23.51	22.78
360.0	31.44	29.98	28.80	27.68	26.55	25.65	24.75	23.91	23.12
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	22.50	21.77	21.21	20.70	20.25	19.69	19.24	18.68	18.11
45.0	22.78	22.05	21.32	20.76	20.14	19.46	18.90	18.39	17.72
90.0	22.28	21.71	22.11	23.91	26.72	30.26	33.64	37.24	40.73
135.0	23.06	22.22	21.66	21.15	20.42	19.91	19.52	19.01	18.73
180.0	23.46	22.56	21.94	21.32	20.76	20.08	19.58	19.07	18.51
225.0	24.53	23.63	22.78	22.11	21.38	20.76	20.19	19.58	19.01
270.0	22.84	22.28	21.83	21.38	21.04	22.67	25.20	28.58	33.13
315.0	22.16	21.49	20.98	20.48	19.80	19.46	18.90	18.39	18.34
360.0	22.50	21.77	21.21	20.70	20.25	19.69	19.24	18.68	18.11
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.61	16.99	16.48	15.92	15.36	14.79	14.29	13.67	13.16
45.0	17.21	16.65	16.03	15.53	15.02	14.46	13.89	13.39	12.88
90.0	44.38	47.93	50.91	54.00	56.31	57.83	57.99	53.61	46.13
135.0	19.07	19.91	20.87	21.88	22.67	22.84	22.05	20.76	19.01
180.0	17.94	17.38	16.82	16.26	15.75	15.19	14.74	14.18	13.67
225.0	18.34	17.72	17.21	16.65	16.03	15.53	15.02	14.46	13.89
270.0	36.56	40.11	43.65	46.91	49.89	52.31	53.83	54.39	51.75
315.0	19.07	20.25	21.15	21.99	22.61	22.39	21.21	19.24	16.82
360.0	17.61	16.99	16.48	15.92	15.36	14.79	14.29	13.67	13.16
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	12.71	12.15	11.70	11.19	10.74	9.79	9.06	8.72	8.44
45.0	12.32	11.81	11.25	10.80	10.18	9.56	9.00	8.61	8.49
90.0	37.58	27.84	19.13	12.88	10.91	9.68	8.94	8.55	8.27
135.0	16.82	14.46	12.99	12.43	11.76	10.07	9.39	8.94	8.49
180.0	13.22	12.77	12.21	11.76	11.31	10.46	9.62	9.17	8.78
225.0	13.39	12.88	12.32	11.81	11.42	10.74	10.07	9.62	9.17
270.0	45.90	38.98	29.59	21.38	14.29	10.58	9.90	9.39	8.89
315.0	14.74	12.71	12.09	11.48	10.24	9.51	9.00	8.55	8.21
360.0	12.71	12.15	11.70	11.19	10.74	9.79	9.06	8.72	8.44

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>8.44</b>
<b>45.0</b>	<b>8.49</b>
<b>90.0</b>	<b>8.27</b>
<b>135.0</b>	<b>8.21</b>
<b>180.0</b>	<b>8.38</b>
<b>225.0</b>	<b>8.89</b>
<b>270.0</b>	<b>8.49</b>
<b>315.0</b>	<b>8.21</b>
<b>360.0</b>	<b>8.44</b>